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AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Control Branch
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United States Department of Agriculture
Washington 25, D. C.

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

GRASSHOPPER problem continues in several States. Heavy infestations reported from eastern and western Colorado, Oklahoma, southern Nebraska, northeast South Dakota, southern Minnesota, Wisconsin and Missouri. Continue major insect pests in North Dakota. (p. 715). Reports of heavy EUROPEAN CORN BORER infestations in the East continue. (p. 716). CHINCH BUG damage to corn in Kentucky unusual. (p. 716).

CORN ROOTWORMS damaging corn in Missouri and West Virginia. Adults abundant in some Kansas counties. (p. 717). CORN LEAF APHID heavy in southwest Missouri on sorghums and damage increasing on barley in Utah. Light infestations appearing in South Dakota and Wisconsin. (p. 718).

ARMYWORM infestations noted in west central Minnesota, southeastern North Dakota, and scattered areas of Wisconsin. (p. 718). CORN SAP BEETLES abundant on corn in Delaware, Maryland and Missouri. (p. 718). MITES damaging small grains in some Colorado counties, also appearing on corn in this State. (p. 718).

WESTERN YELLOW-STRIPED ARMYWORM has caused more widespread damage than for several years in California. Oregon also reports an outbreak of these pests. Damage to alfalfa in Washoe County, Nevada and Millard County, Utah. (p. 719). ALFALFA WEBWORM is very abundant in Republican Valley, Nebraska. (p. 719).

LEAF MINERS caused considerable damage in some alfalfa in Arizona. (p. 720). POTATO LEAFHOPPER damage to alfalfa noticeable in Delaware, Maryland and Wisconsin. (p. 720). THREE-CORNERED ALFALFA HOPPER heaviest in 5 years on Yuma Mesa, Arizona. (p. 720).

SPOTTED ALFALFA APHID has spread through eastern Colorado. Destructive populations in several counties of Utah and Arizona. Moderate to heavy in some fields of Kansas and increasing in some areas of Louisiana. (p. 721). PLANT BUGS abundant in alfalfa in several States including Idaho, Arizona, Kansas, Utah and Wisconsin. (p. 721).

ORCHARD MITES problem on apples in several Indiana counties. Also heavy in areas of Missouri, Oklahoma, New Jersey and Idaho. Increasing in southern Illinois, Ohio and in areas of Oregon. (p. 723). MEDITERRANEAN FRUIT FLY reported from Pasco and Orange Counties, Florida. (p. 726).

POTATO PSYLLID populations in epidemic proportions in Colorado; some damage in Washington County, Utah but populations low in western Nebraska. (p. 727). SQUASH BUG heavy in Tulsa area of Oklahoma. Also of concern in areas of Delaware and Utah. (p. 728). BEET WEBWORM severe in

truck crops in some Colorado counties. (p. 729).

LONGHORNED GRASSHOPPERS injuring tobacco in central Kentucky and threatening this crop in Dane County, Wisconsin. (p. 730).

BOLL WEEVIL damage increasing in untreated cotton in North Carolina. Activity increasing in South Carolina, Louisiana and areas of Arkansas and Texas. High infestations reported from Georgia, Louisiana and other areas. Situation critical in Alabama. (pp. 730, 738). BOLLWORMS building up in Arizona, South Carolina and Arkansas. Damaging numbers appearing in west Tennessee. Heavy infestation in some areas of Texas. (p. 731). PINK BOLLWORM increasing in south central Texas. (p. 732). LYGUS BUGS heavy in cotton in San Joaquin Valley, California. Rapid increase in several Arizona counties. (p. 732). COTTON LEAFWORM moth taken at Tallulah, Louisiana, July 19. (p. 733).

JAPANESE BEETLE abundant in some areas. (pp. 730, 735, 738).

ADDITIONAL NOTES. (p. 738).

WEATHER SUMMARY. (p. 722).

STATES reporting this week - 39.

LIGHT TRAP report. (p. 742).

SURVEY METHODS for LARCH SAWFLY. (p. 739).

Distribution maps of RANGE GRASSHOPPERS. (p. 743).

Reports in this issue are for the week ending July 20 unless otherwise designated.

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - CALIFORNIA - Infestation in rangeland in Glenn County but no crop damage. Also 750 acres infested in Tulalake area. Medium to heavy on Santa Barbara County range; some damage to beans. Camnula pellucida caused heavy damage to 4,000 acres in San Diego County. Medium damage in Calaveras County. Flax and cantaloups infested in western Kings County. From 4 to 5 grasshoppers per square yard on 60,000 acres of rangeland in Shasta County July 17 but no migration to crops; Melanoplus devastator principal species. (Cal. Coop. Rept.).

COLORADO - Heavy infestation in several eastern and western counties. Damaging agricultural crops and insecticides being applied. (Ext. Serv.)

IDAHO - Common in alfalfa and clover in Fremont, Madison, Jefferson and Bonneville Counties, but seldom more than 3 per sweep. Populations, mainly C. pellucida, running 25-75 per square yard in Henry's Lake area. This species is causing considerable damage in several grain fields in Teton River Canyon area. (Gittins, Barr).

UTAH - Damage increasing in local areas with migrations to crops. (Knowlton).

TEXAS - Medium to Heavy on range and crops in Sherman County. (Goule).

OKLAHOMA - Heavy in all untreated areas; 8-25 per square yard common in roadsides and field margins in eastern area. Sixty Aulocara sp. nymphs on one ranch in Tulsa County. (Coppock).

KANSAS - Planned control complete in Comanche, Barber and Kiowa Counties but threatening to severe populations persist on unsprayed rangeland in these counties. Crop species continue injury in many local areas of central and eastern sections. Populations in northern areas largely adults with a few second-generation M. mexicanus nymphs. (Matthew).

NEBRASKA - Counts of Melanoplus adults and nymphs remain high in southern tier of counties, particularly in margins of alfalfa. M. bivittatus and M. mexicanus are adult over southern part of State. Nymphs and adults of M. femur-rubrum and M. differentialis in same area. From 7-50 per square yard in alfalfa. (Andersen, Roselle).

SOUTH DAKOTA - Threat continues, especially in northeast where 40 or more nymphs per square yard common. M. femur rubrum dominant species. (Hantsbarger).

NORTH DAKOTA - Continue major insect pest in State. Approaching adult stage in many areas and moving into small grains and flax. Some fields severely damaged. Increased migration into late crops from harvested fields expected. (N. D. Ins. Rept.).

MINNESOTA - Damaging populations in most southern counties with extensive spraying underway. Up to 200 per square yard reported in Brown County. Nymphs about one-half grown in southern counties but hatching continues in central and northern areas. (Minn. Ins. Rept.).

MISSOURI - Continue problem over most of State especially on alfalfa, red clover, pastures and gardens. Damage to row crops confined to margins in southwest. Very heavy threat remains in northwest but slowed by rains. Second-generation M. mexicanus nymphs in southwest. Flights of M. mexicanus and M. differentialis observed near Springfield. (Shotwell, Thomas).

WISCONSIN - M. femur-rubrum hatching has been erratic but large numbers are reported in margins of many fields. Heavy grasshopper populations reported from 15 counties. (Wis. Ins. Bul.).

ILLINOIS - Maximum population (Melanoplus spp.) in fencerows was 30 per square yard in western area. Longhorn grasshoppers are very numerous

in this section, more than 5 per square yard in fencerows. (Ill. Ins. Rept.).

EUROPEAN CORN BORER (Pyrausta nubilalis) - RHODE ISLAND - Very heavy throughout State. Infestations from 18-35 percent on sweet corn. Damage mostly in tassels. Indications second brood will be extremely abundant and damaging. (Steve). MASSACHUSETTS - Injury to tassels and stalks of early corn very severe; 70-90 percent infestation in many untreated fields. Egg-laying for second brood expected first week in August. (Crop Pest Cont. Mess.). MARYLAND - From 16-90 percent infestation in early sweet corn in Frederick and Carroll Counties; 2.4 per infested plant. (U. Md., Ent. Dept.). DELAWARE - Destructive to corn generally. New adults common. (Milliron). PENNSYLVANIA - Extremely heavy in field corn in Snyder County.. In one case 3 acres destroyed. (Gesell). OHIO - Reports of severe leaf injury. Early-planted fields of dent corn have as high as 8-10 borers per stalk, mostly third and fourth instars. (Neiswander). ILLINOIS - Three percent pupation in central and eastern areas, 4 in western and none in northern. Many borers dying in some areas of eastern and western Illinois but decrease over State not determined. (Ill. Ins. Rept.). MINNESOTA - Percent infestation by areas: south central 40, southwest 61, southeast 33, central 28. Borers per 100 plants: south central 121, southwest 213, southeast 60, central 70. Mostly third instars. Development week to 10 days ahead of 1955. (Minn. Ins. Rept.). NORTH DAKOTA - Continues light in Cass and Richland Counties, 20 percent plants showing shot-holing. (N. D. Ins. Rept.). WISCONSIN - From third to fifth instars in southern area. (Wis. Ins. Bul.). MISSOURI - Peak egg-laying for second generation expected in southeast by August 1. From 24-52 egg masses per 100 plants and some third-instar larvae of second generation. Peak egg-laying in central area expected August 1-10. About 15 percent pupation and no emergence in northwest. (Burdett). ARKANSAS - Control may be needed on late corn in eastern area. (Warren, Harrendorf, Barnes). SOUTH DAKOTA - Fifteen percent of plants infested in northeast and east central areas. Twenty-three percent of borers in fourth instar. (Hantsbarger). KANSAS - Ten of 24 fields examined in Jefferson County found infested. Infestation ranged generally 7 percent or less. (Sherrod).

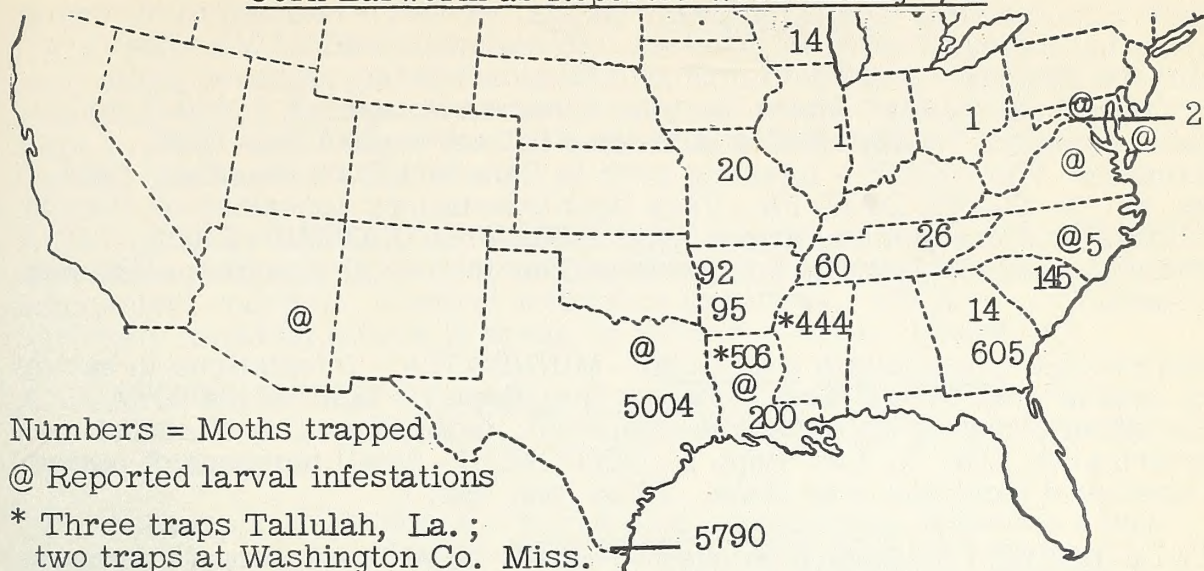
CHINCH BUGS- KENTUCKY - Found damaging corn in extreme western area, particularly in Paducah vicinity, in early July. First report of noticeable damage by this pest in Kentucky during past 27 years. (Price).

CHINCH BUG (Blissus leucopterus) - MISSOURI - Damage and populations declining in northern half of State due to rains. Considerable numbers of second-generation nymphs. (Kyd, Thomas).

HAIRY CHINCH BUG (Blissus leucopterus hirtus) - PENNSYLVANIA - Very common and causing considerable injury in turf in Allegheny County. (Udine).

APHIDS - NORTH CAROLINA - Severe on sorghum in Tyrrell County. (Scott).

Corn Earworm as Reported Week Ending 7/21



CORN EARWORM (*Heliothis zea*) - ARIZONIA - Heavy on 100 acres of corn in Graham County, July 18. (Ariz. Coop. Rept.). TEXAS - Light on grain sorghum in Kaufman County. (Hawkins). LOUISIANA - Eighty per 100 sweeps in alfalfa in Natchitoches Parish; 20 per 100 in 2 fields in Bossier Parish. (Oliver). NORTH CAROLINA - Average of .73 eggs per silk at Clayton. (Farrier). DELAWARE - Small larvae in sweet corn silks in Sussex County. (Milliron). MARYLAND - One of 3 silks in early sweet corn in Carroll County has eggs, 1.3 per silk. (U. Md., Ent. Dept.).

LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*) - GEORGIA - Moderate damage to soybeans in Burke County, July 13. (Morgan). MISSISSIPPI - Damage to small sorghum in Forrest County, a 50-acre field replanted 3 times. (Broome). ARIZONA - Light to moderate on 400 acres of sorghum at Phoenix. (Ariz. Coop. Rept.).

CORN FLEA BEETLES - ILLINOIS - Common in southern half of State. (Ill. Ins. Rept.). DELAWARE - *Chaetocnema pulicaria* prevalent in late corn. (Milliron). UTAH - Damaging corn in Washington County. (Knowlton).

CORN ROOTWORMS - MISSOURI - *Diabrotica longicornis* larval damage becoming more common in river bottom areas. Adults still feeding on silks. (Kyd, Thomas). WEST VIRGINIA - *D. undecimpunctata howardi* injury extensive on corn in local sites in Monongalia County. (Dorsey, Hansen). KANSAS - *D. virgifera* adults abundant in some corn fields in Smith and Dickinson Counties. (Gates).

SORGHUM WEBWORM (*Celama sorghiella*) - TEXAS - Widespread in grain sorghum in Calhoun and Kaufman Counties. (Cook, Hawkins).

A RICE LEAF MINER (*Hydrellia griseola*) - CALIFORNIA - Threatening last spring but did not develop; now of concern in most rice areas. (Cal. Coop. Rept.).

CORN LEAF APHID (Rhopalosiphum maidis) - UTAH - Damage to spring barley increasing in several counties. (Knowlton). MISSOURI - Heavy numbers declining in much of northern Missouri but continue on grain sorghums in southwest where leaf discoloration occurring, 1,000-2,500 aphids per plant. Lady beetles numerous but not controlling. (Kyd, Thomas). WISCONSIN - Infesting corn in Dane and Rock Counties. (Wis. Ins. Bul.). SOUTH DAKOTA - Very light infestations appearing on corn in northeast and east central areas. (Hantsbarger). KANSAS - Light infestations in sorghums in northwest and north central counties. (Painter, Pathak).

ARMYWORM (Pseudaletia unipuncta) - MINNESOTA - Infestations in barley and oats in west central area. (Minn. Ins. Rept.). NORTH DAKOTA - Infestations, mostly light and non-economic, in small grains in southeastern area. (N. D. Ins. Rept.). WISCONSIN - Small numbers of larvae in scattered locations over State. (Wis. Ins. Bul.).

STALK BORER (Papaipema nebris) - RHODE ISLAND - Extensive damage in margins of corn, as high as 40 percent infestations in outside rows. (Steve).

SAP BEETLES - DELAWARE - Adults abundant on corn. Larvae noted near Little Creek. (Milliron). MARYLAND - Heavy on sweet corn in Carroll County. (U. Md., Ent. Dept.). MISSOURI - Carpophilus sp. adults and larvae becoming common in ears of corn. (Kyd, Thomas).

MITES - COLORADO* - Tetranychus telarius and Petrobia latens damaging wheat, barley and grasses in Montezuma and Archuleta Counties. (ARS, Exp. Sta.). IDAHO - T. telarius caused severe damage on 200 acres of red clover and alfalfa in Canyon County. (Bechtolt). MARYLAND - Some moderate damage to soybeans in Wicomico and Worcester Counties but generally light. (U. Md., Ent. Dept.).

RICE STINK BUG (Solubea pugnax) - LOUISIANA - Twenty to 44 per 100 sweeps in Evangeline, Acadia and St. Landry Parishes. (Oliver).

MAY BEETLES (Phyllophaga spp.) - WISCONSIN - Heavy flights occurred in many sections. May be of concern in 1957. (Wis. Ins. Bul.).

A LEAFHOPPER (Dikraneura absenta) - NEVADA - Causing considerable damage to lawns and ornamental flowers adjacent to lawns in western area. (Gallaway, July 14).

GREEN JUNE BEETLE (Cotinis nitida) - KENTUCKY - Adults abundant on tassels of corn and on ripe berries. (Thurston). DELAWARE - Conspicuous on corn in some places. (Milliron). NORTH CAROLINA - Large numbers in pastures in Gates and Pamlico Counties. (Scott).

A GRAPE COLASPIS (Colaspis sp.) - ILLINOIS - Maximum adult populations was 280 per 100 sweeps in red clover. (Ill. Ins. Rept.).

*T. telarius appearing in corn in several southeast counties. (Exp. Sta.).

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) - CALIFORNIA - More widespread damage than for several years. Increasing in crops, particularly alfalfa, from northern Siskiyou County into San Joaquin Valley. Greatest damage to seed crops. (Cal. Coop. Rept.). NEVADA - Reports of damage to alfalfa in northern Washoe County. (Gallaway, July 14).

A YELLOW-STRIPED ARMYWORM (Prodenia sp.) - OREGON - Outbreak with damage to alfalfa, clover and potatoes in Klamath, Douglas, Jackson and central counties. Control measures underway. (Every). UTAH - Seriously infesting alfalfa in areas in Millard County. (Knowlton).

ALFALFA WEBWORM (Loxostege commixtalis) - NEBRASKA - Very abundant in Republican Valley, 5-26 per 10 sweeps. Webbing in most fields. (Andersen).

CUTWORMS - CALIFORNIA - Peridroma margaritosa damaging some alfalfa in Kern County. (Cal. Coop. Rept.). DELAWARE - Agrotis gladiaria causing some damage to corn east of Georgetown. (Milliron).

ALFALFA CATERPILLAR (Colias philodice eurytheme) - NEBRASKA - Adults very prevalent in alfalfa in Republican Valley and panhandle area; 8 larvae per 10 sweeps. (Andersen). ARIZONA - Becoming more numerous in alfalfa at Yuma, 30-50 larvae per 100 sweeps. (Ariz. Coop. Rept.). UTAH - Generally moderate. (Knowlton).

GARDEN WEBWORM (Loxostege similalis) - KANSAS - Numerous in some alfalfa in Comanche County. Some hay cut early. Moths numerous in central and north central areas. (Matthew).

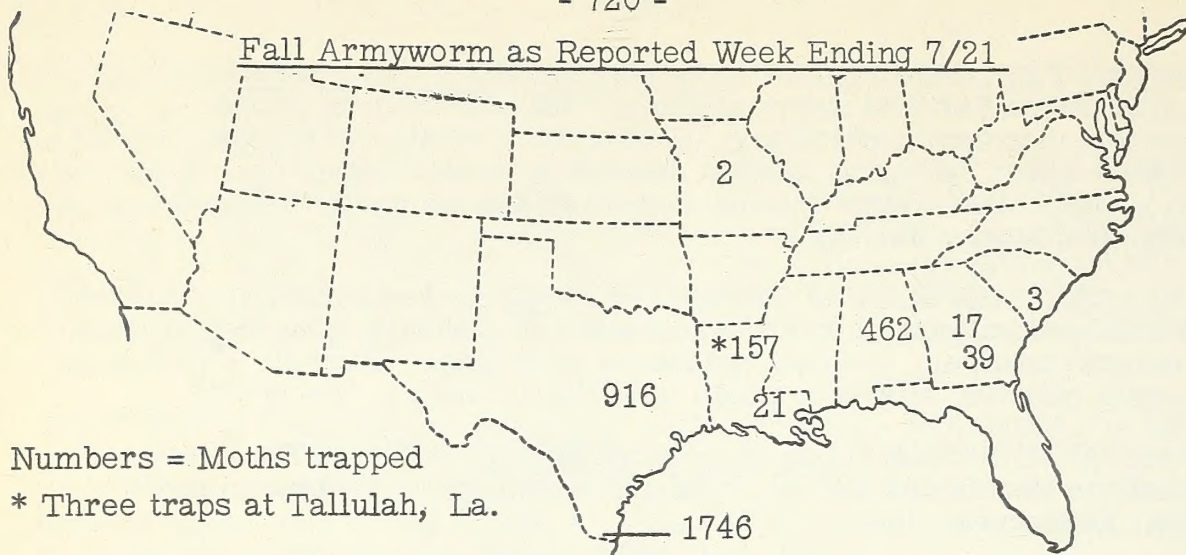
FALSE CHINCH BUG (Nysius ericae) - FLORIDA - Adults injuring cow-peas at Live Oak, Suwannee County, July 11. Det. A. N. Tissot. (Lundy).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Heavy general infestation in field of irrigated alfalfa near Guymon, May 15. About 40 nymphs and adults per 4-inch crown. As far as known, first record of this pest on alfalfa for Oklahoma. Determined by E. W. Baker. (Coppock).

BLISTER BEETLES - NEBRASKA - Epicauta spp. and Meloe spp. range from 5-8 per 10 sweeps in alfalfa in Republican Valley and panhandle area. (Andersen). KANSAS - Heavy populations in some alfalfa in Riley County. (Schesser).

ALFALFA WEEVIL (Hypera postica) - CALIFORNIA - Medium to heavy damage in Lassen County. (Cal. Coop. Rept.). IDAHO - Average of 3-10 larvae per sweep in alfalfa in Fremont, Shoshone and Gooding Counties. (Gittins). Three to 4 per sweep in some alfalfa north of Parma. (Scott).

STINK BUGS - ARIZONA - Five to 10 per sweep in some alfalfa seed fields on Yuma Mesa and increasing. (Ariz. Coop. Rept.).



FALL ARMYWORM (Laphygma frugiperda) - LOUISIANA - Remains light generally, 3-20 per 100 sweeps in alfalfa and grasses in 4 parishes. (Oliver).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - IDAHO - Damage common on seed clover in eastern and south central areas though heavy damage rarely encountered. (Gittins). MINNESOTA - Summer-generation adults emerging July 10. (Minn. Ins. Rept.).

LEAF MINERS - ARIZONA - Liriomyza sp. common in alfalfa in Maricopa, Pima, Pinal and Yuma Counties. Considerable damage some fields. Very prevalent in 20 acres of peanuts near Yuma. (Ariz. Coop. Rept., July 16).

POTATO LEAFHOPPER (Empoasca fabae) - DELAWARE - Noticeable damage to alfalfa. Abundant on soybeans. (Milliron). MARYLAND - Yellowing conspicuous in some fields in central counties. Populations variable, as high as 21 in 1 sweep. (U. Md., Ent. Dept.). WISCONSIN - Yellowing of alfalfa showing up. (Wis. Ins. Bul.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - LOUISIANA - Twenty-six to 180 per 100 sweeps in Natchitoches and West Baton Rouge Parishes. (Oliver). ARIZONA - Two to 4 per sweep in 3 alfalfa seed fields on Yuma Mesa. Heaviest in 5 years. (Ariz. Coop. Rept.).

CLOVER APHID (Anuraphis bakeri) - IDAHO - Heavy infestation in seed red clover in Idaho Falls area. Light, seldom more than 10 percent of heads infested, in Lincoln, Gooding, Jerome and Twin Falls Counties. Predators numerous in these counties. (Gittins). OREGON - This species with spider mites building up on clover in Ontario area but not economic to July 19. (Morrison).

A NITIDULID (Meligethes nigrescens) - OREGON Large numbers migrating into red clover in Willamette Valley, July 8-14. (Every).

SPOTTED ALFALFA APHID - CALIFORNIA - Light in Orange and Santa Barbara Counties, light to heavy in San Bernardino County, light to severe in Tulare County, medium in Kern County. Lighter than expected in Sacramento Valley but build-up in Tehama County. (Cal. Coop. Rept.). COLORADO - Has spread through most of eastern area. As many as 15,000 aphids per 100 stems in Prowers, Bent and Otero Counties; heavy honeydew in these counties. Populations increasing in Montezuma County in southwestern area. Many winged forms. (Exp. Sta.). ARIZONA - Remains at high levels, severe damage in many alfalfa fields in Maricopa, Pinal and Pima Counties. (Ariz. Coop. Rept., July 16). UTAH - Recent spread and build-up rapid. Becoming destructive in parts of Millard, Iron, Beaver, Kane and Washington Counties. Control underway. (Knowlton). NEBRASKA - Small numbers in Jefferson, Thayer, Nuckolls, Red Willow, Hitchcock and Dundey Counties; 7-114 per 10 sweeps. (Andersen). OKLAHOMA - Low throughout State. Lady beetle populations remain fairly high in most areas. (Coppock). MISSOURI - Remains low over southern half of State, 0-18 per sweep. (Kyd, Thomas). GEORGIA - Moderate infestation on alfalfa in Stephens and Hancock Counties. (Johnson). LOUISIANA - Increasing in Natchitoches and Bossier Parishes. (Oliver). KANSAS - Observations indicate aphid present in all of Kansas except northern tier of Counties. Widely-scattered moderate to heavy infestations in a few fields in Edwards, Pawnee and Barton Counties and in Arkansas River Valley where counts up to estimated 20,000 aphids per sweep (90 percent winged). (Matthew). Aphids per 25 sweeps by county: Rice 375-4,00, Barton 175-15,000, Marion 0-300, Wabaunsee 0-1,475, Pottawatomie 50-3,250. (Burkhardt). Counts in 16 additional counties ran 50-450 aphids per 25 sweeps. (Matthew, Painter, Pathak).

PEA APHID (Macrosiphum pisi) - CALIFORNIA - Heavy in alfalfa fields in Sacramento County. (Cal. Coop. Rept.). IDAHO - Very common in red clover and alfalfa in eastern area. Extremely abundant in some alfalfa southwest of Twin Falls. Heavy on alfalfa in Moscow area but no apparent damage. (Gittins, Manis). NEBRASKA - Moderate in Republican Valley and in panhandle counties, 75-360 per sweep. (Andersen). UTAH - Moderate to severe on alfalfa in some areas. (Knowlton). SOUTH DAKOTA - Increasing on alfalfa in northeast, 55 per 10 sweeps. (Hantsbarger). WISCONSIN - Heavy on alfalfa in Waukesha County. (Wis. Ins. Bul.).

CLOVER SEED CHALCID (Bruchophagus gibbus) - OREGON - Severe damage to white clover in Silverton Hills area of Marion County. Up to 50 percent infestation in some fields, pupation underway. (Stephen). ARIZONA - More noticeable in alfalfa at Yuma but not abundant. (Ariz. Coop. Rept.). SOUTH DAKOTA - Numerous complaints concerning emergence of adults in stored 1955 alfalfa seed. (Lofgren).

PLANT BUGS - IDAHO - Lygus counts in alfalfa: 2 adults and 2 nymphs per sweep in Butte City and Arco areas, 4-5 per sweep in Sugar City, Lorenzo, Rigby and Rexburg areas. In red clover, 4 per sweep at Twin Falls, more than 5 per sweep at Idaho Falls, about 2 per sweep in Lincoln and Gooding Counties. L. hesperus and L. elisus involved. (Gittins). ARIZONA - Lygus extremely abundant in alfalfa in southern area, July 16. Five to 20 per sweeps on Yuma Mesa; 125 per 100 sweeps at Queen Creek, Maricopa

County. (Ariz. Coop. Rept.). NEBRASKA - Seven Adelphocoris lineolatus per 10 sweeps in alfalfa in Republican Valley. (Andersen). UTAH - Severely damaged alfalfa for seed in Millard, Uintah and Duchesne Counties where not controlled. Generally numerous in alfalfa. (Knowlton). KANSAS - From 2-9 A. lineolatus adults per sweep in alfalfa in Rush, Ellis, Rooks and Cloud Counties. (Matthew). SOUTH DAKOTA - A. lineolatus increasing in alfalfa, as high as 24 per 10 sweeps. (Hantsbarger). TEXAS - Lygus locally heavy on alfalfa seed crop in Collingsworth County. (Thomas). WISCONSIN - Very numerous in alfalfa. (Wis. Ins. Bul.).

WEATHER OF THE WEEK ENDING JULY 23, 1956

Unseasonably cool weather prevailed over the northeastern portions of the country, particularly in the northwestern Great Lakes region where daytime highs were generally in the upper 70's and nighttime lows in the mid 50's and resulting weekly averages were 9° below the normal. The entire area set off by a line extending from Glasgow, Mont. to Amarillo, Tex., then eastward to Atlantic City, N. J., experienced relatively cool weather with averages below normal by at least 3°. Over the South and elsewhere temperatures averaged near normal to somewhat above except in central Washington, Oregon and northern California where weekly departures were 6° above normal as daily maxima reached 90° on all days and 100° on some as far north as the Canadian Border. Daily frontal activity extending in an east-west direction existed along the boundary between the existing warm and cool air masses and on occasions extended northwestward through the Central and northern Plain States. Moderate to heavy precipitation totals were confined mainly to the eastern half of the Nation with a narrow projection extending over Oklahoma, the Texas Panhandle and central New Mexico, while in the West amounts were generally insignificant except in mountainous and a few isolated areas. Weekly totals were also light in some eastern sections, particularly in parts of Florida, Louisiana, Georgia, South Carolina, Kentucky, and the New England States.

Heavy rains brought flooding to some central Atlantic states as a coastal storm moved up the seaboard. One 24-hour amount recorded was 9.15 inches at Jackson Springs, N. C., where 2 lives were lost and property damages were reported. Montgomery and Washington Counties, Maryland, also reported damage and loss of lives due to flooding from this storm. Other large amounts recorded during the week were 5.50 inches in 90 minutes at Mangum, Okla. and 5.72 inches at Baraboo, Wis. on the night of July 18-19. Hail destruction was reported in several states with Lake County, Tenn. reporting damage to 1500 acres of cotton, 500 acres of corn and 3000 acres of soybeans. Tornadoes for the week were reported at Lorain, Ohio, over Little Muskego Lake, Wis., Pennock, Minn., and Limon, Colo. (Summary Supplied by United States Weather Bureau).

FRUIT INSECTS

CODLING MOTH (Carpocapsa pomonella) - DELAWARE - First injury by second-brood larvae in several orchards. (Stearns). OHIO - First second-brood moth from cages taken July 17. (Cutright). INDIANA - Heavy second-brood activity in Orleans area. (Marshall). Peak of second brood activity past in Vincennes area. (Hamilton). ILLINOIS - Second-generation entrances found readily where first generation not completely controlled in Carbondale area. (Chandler). MISSOURI - New entries reported from all parts of State. (Wkly. Rept. Fr. Grow.). CALIFORNIA - Light damage to pear and apple orchards in Lassen County. Medium damage to walnuts in Santa Barbara County and medium infestations in Orange County walnuts. (Cal. Coop. Rept.).

ORCHARD MITES - INDIANA - Attack on apples severe and persistent in Washington, Orange, Floyd and Crawford Counties. (Marshall). Tetranychus sp. becoming more abundant in Vincennes area. Confined to lower branches. (Hamilton). MISSOURI - Heavy infestation reported from Kansas City area. Still present in dry areas in southern section of State. (Wkly. Rept. Fr. Grow.). OKLAHOMA - Unsprayed trees in Perkins area have heavy populations. Light infestations in some orchards near Keystone. (Coppock). ARIZONA - Webbing of citrus leaves by a mite, prob. Eotetranychus yumensis reported at Yuma. (Ariz. Coop. Rept.). UTAH - Damage to fruit trees increasing in many orchards. (Knowlton).

EUROPEAN RED MITE (Metatetranychus ulmi) - ILLINOIS - Slowly decreasing in Carbondale area. (Chandler). NEW JERSEY - Considerable numbers in many apple orchards. (Ins.-Dis. News.). IDAHO - Very high populations on apple trees where no treatments made. Reaching 50 per leaf on pear trees 8-10 days after treatment. (Scott). OREGON - Building up to economic numbers at The Dalles and Hood River. (Ellertson).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - ILLINOIS - Increasing in Carbondale area. (Chandler). OHIO - Increasing in some peach orchards in spite of early applications of insecticides. (Rings). OREGON - Beginning to move to apple trees at Hood River. (Ellertson).

ROSY APPLE APHID (Anuraphis roseus) - CALIFORNIA - Medium to heavy infestations in apple orchards in Santa Cruz County. (Cal. Coop. Rept.).

APPLE MAGGOT (Rhagoletis pomonella) - WEST VIRGINIA - Adults observed in Monongalia County. (Dorsey, Hansen). MAINE - In emergence, cages in Jonesboro, July 5. (Boulanger).

APPLE LEAF SKELETONIZER (Psorosina hammondi) - OKLAHOMA - Common on apples in Perkins area. (Coppock).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - WISCONSIN - Adults very numerous in Crawford County, July 11. (Wis. Ins. Bul.).

RUSTY TUSSOCK MOTH (Orgyia antiqua) - MAINE - Feeding on seedling apple trees at Monmouth. (Boulanger, July 8).

UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) - ILLINOIS - Present in much of Jackson, Union and Johnson Counties but severe only in some blocks of early apples where little spraying done. (Chandler).

CUTWORMS - OREGON - Defoliating young apple sprouts and grafts in Milton-Freewater area. Infestations heavy with all plants with at least one cutworm. (Brown).

GRASSHOPPERS - OKLAHOMA - Most damaging insect of fruit this season. Most damaging to peaches, apples and grapes. (Coppock).

PEAR PSYLLA (Psylla pyricola) - IDAHO - Two infestations in commercial orchards near Payette. Common in Weiser area. (Manis, July 20). All stages several orchards east of Homedale. High populations one orchard. (Scott).

PEAR-SLUG (Caliroa cerasi) - UTAH - Increasing in some Davis and Salt Lake County cherry orchards. (Knowlton).

PLUM CURCULIO (Conotrachelus nenuphar) - ILLINOIS - Jarring shows low population on peaches in Carbondale area. Second brood dropping off. (Chandler). MISSOURI - Young larvae reported in plums and peaches vicinity of Cape Girardeau. (Wkly. Rept. Fr. Grow.).

GREEN JUNE BEETLE (Cotinis nitida) - MISSOURI - Unusually heavy in central area on peaches, apples, blackberries and other ripening fruit. (Wkly. Rept. Fr. Grow.).

PEACH TWIG BORER (Anarsia lineatella) - CALIFORNIA - Heavy damage to peaches in 200 acres, July 16, in Merced County. (Cal. Coop. Rept.).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - NEW JERSEY - Second brood expected to reach peak in northern area, July 17. (Ins.-Dis. News.).

CHERRY FRUIT FLY (Rhagoletis cingulata) - IDAHO - Larvae heavily infesting a 10-acre cherry orchard and individual backyard fruit trees in Weiser. (Hackler).

CICADIDS - OREGON - So numerous in a prune orchard at The Dalles that serious injury resulted from oviposition. (Burts).

CLOVER MITE (Bryobia praetiosa) - CALIFORNIA - Light to extensive damage in prune orchards in Napa County. (Cal. Coop. Rept.).

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Medium to heavy infestation in deciduous fruit orchards in Tulare County. Medium to heavy populations in olive orchards in Tulare County. (Cal. Coop. Rept.).

GRAPE PHYLLOXERA (Phylloxera vitifoliae) - CALIFORNIA - Some severe damage in vineyards in Tulare County. (Cal. Coop. Rept.).

GRAPE MEALYBUG (Pseudococcus maritimus) - CALIFORNIA - Severe damage in vineyards in Tulare County. (Cal. Coop. Rept.).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - CALIFORNIA - Inspection on 26 properties in San Diego County failed to show infestation, July 4. (Cal. Coop. Rept.). ARIZONA - Adults of second brood now abundant in Tucson. (Ariz. Coop. Rept.).

GRAPE LEAF SKELETONZIER (Harrisina americana) - NORTH CAROLINA - From 20-30 larvae per leaf in local infestation in Alamance County. (Coble, Farrier).

EIGHT-SPOTTED FORESTER (Alypia octomaculata) - MAINE - Attacking grapes in Cumberland County. (Boulanger, July 5).

CRANBERRY FRUITWORM (Acrobasis vaccinii) - WISCONSIN - Egg laying at peak. (Wis. Ins. Bul.).

BLACK-HEADED FIREWORM (Rhopobota naevana) - WISCONSIN - Second brood hatching completed with larvae feeding on cranberry blossoms and small fruit. (Wis. Ins. Bul.).

HICKORY TUSSOCK MOTH (Halisidota caryae) - DELAWARE - Heavy on black walnut at Newark. (Milliron).

FILBERTWORM (Melissopus latiferreanus) - OREGON - Adults began emerging in Lane County, July 9. (Thompson).

Citrus Insect Situation, California, to July 17

CITRUS RUST MITE infestations light in lemon orchards in Santa Barbara County. SOFT SCALE light to heavy on citrus in Tulare County. CITRICOLA SCALE light to heavy in some Tulare County orchards. CITRUS RED MITE medium to heavy locally in Orange County. Heavy in San Diego County and light in San Bernardino County. BLACK SCALE infestations heavy in part of San Bernardino County orchards. YELLOW SCALE light to heavy in Tulare County. Some parasites present. CALIFORNIA RED SCALE light in Orange County and medium in some San Diego County orchards. Light to medium and occasionally heavy infestations in San Bernardino County. ORANGE TORTRIX medium in Orange County. (Cal. Coop. Rept.).

THRIPS - ARIZONA - Continue to appear on new growth of lemons at Yuma. Some new plantings untreated have severely damaged leaves. (Ariz. Coop. Rept.).

CITRUS RUST MITE (Phyllocoptruta oleivora) - FLORIDA - Activity on both leaves and fruit increased sharply second week of July and continued increase during July is expected. Of groves checked, 67 percent were infested. (Pratt, Thompson, Johnson).

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) - FLORIDA - Reported in Pasco County, July 18 and in Orange County, July 24. (PPC).

A FIG BEETLE (Cotinix texana) - ARIZONA - Adults very numerous in Tucson. (Ariz. Coop. Rept.).

TRUCK CROP INSECTS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - IDAHO - Heavy infestations in potatoes in Cassia County. Generally spotted infestations in most fields of eastern and south central areas with exception of some fields west of Idaho Falls. (Bodily, Gittins). OREGON - More abundant than normal with control necessary in Malheur County and in central areas. (Every). DELAWARE - Requiring control on tomatoes many areas of Sussex County. (Milliron).

BLISTER BEETLES - OREGON - Damage by Epicauta sp. to tomatoes, dahlias and other plants in Agnes. (Every). TEXAS - Epicauta sp. infestations medium and widespread in Jack County. (Hulsey). OKLAHOMA - Remain abundant in gardens and in alfalfa throughout the State. (Coppock).

POTATO FLEA BEETLE (Epitrix cucumeris) - DELAWARE - Very numerous on potatoes near Smyrna. (Milliron). MAINE - Few overwintered beetles survived in Presque Isle area. Damage light in potatoes. (Shands et al.).

WESTERN POTATO FLEA BEETLE (Epitrix subcrinita) - IDAHO - Damage widespread but not generally heavy throughout south central and eastern areas. (Gittins).

TUBER FLEA BEETLE (Epitrix tuberis) - NEBRASKA - Counts 4-20 per 100 sweeps in the Gering and Scottsbluff valleys. (Andersen).

PALE-STRIPED FLEA BEETLE (Systema blanda) - COLORADO - Damaging populations on potatoes, sugar beets and beans in Montrose, Delta and Mesa Counties. (Exp. Sta.). DELAWARE - Injuring lima and snap beans at Middletown. (Milliron).

ELM LEAF BEETLE (Galerucella xanthomelaena) - NEVADA - Larvae and adults caused light damage to potatoes near heavily-infested trees near Reno. Control necessary. Pupation under way throughout infested areas. (Gallaway, July 14).

GREEN PEACH APHID (Myzus persicae) - IDAHO - Damaging populations on potatoes in Canyon County. (Scott).

HORNWORMS (Protoparce spp.) - COLORADO - Eggs and larvae in tomato fields in Prowers, Las Animas, Bent, Otero and El Paso Counties. (Exp. Sta.). MARYLAND - Moderate damage to canning tomatoes in Carroll County. Light on tomatoes on Eastern Shore. (U. Md., Ent. Dept.).

POTATO PSYLLID (Paratrioza cockerelli) - COLORADO - Populations in epidemic proportions. Many early fields showing symptoms. Potato fields not properly treated showing extreme symptoms of yellows. Yields expected to be affected in Weld, Morgan and Adams Counties. Heavy populations in Conejos, Costilla and Alamosa Counties. Adults averaging 43 per 100 sweeps in potatoes. (Exp. Sta. and Chem. Ind.). UTAH - Causing some damage to potatoes at St. George and Washington. (Knowlton). NEBRASKA - Adult populations down due to hot weather in panhandle counties. Counts 1-4 per 100 sweeps. Nymphs in early fields 1-5 per 20 plants. (Andersen).

POTATO LEAFHOPPER (Empoasca fabae) - PENNSYLVANIA - Plentiful in Cambria County in potato fields not recently sprayed. (Udine). On potatoes in Clearfield County, 130 per 24 sweeps. (Adams). DELAWARE - Numerous generally on beans. Severe on potatoes some areas. (Milliron). MARYLAND - Abundant on snap and lima beans in most sections. Moderate on soybeans in Worcester County. (U. Md., Ent. Dept.). SOUTH DAKOTA - Population of 20 per ten sweeps in a commercial potato field in Codrington County. (Hantsbarger).

STALK BORER (Papaipema nebris) - PENNSYLVANIA - Considerable numbers in tomatoes in Allegheny County. (Udine).

TOMATO FRUITWORM (Heliothis zea) - COLORADO - General infestation of eggs and larvae in commercial tomato plantings in Prowers, Las Animas, Bent, Otero and El Paso Counties. (Expt. Sta.).

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) - CALIFORNIA - Damage to tomatoes and hops in Sacramento County. (Cal. Coop. Rept.).

CABBAGE LOOPER (Trichoplusia ni) - NEVADA - A larva believed to be this species damaging potatoes in Lyon County. (Gallaway, July 14). DELAWARE - Causing foliage damage and fruit injury to tomatoes throughout State. Heavy on commercial cabbage west of Middletown and at Ellendale. (Milliron).

GARDEN FLEAHOPPER (Halticus bracteatus) - DELAWARE - Abundant on tomatoes in Georgetown-Ellendale area. (Milliron).

GRASSHOPPERS - WISCONSIN - Damaging tomatoes and raspberries in Sauk County. (Wis. Ins. Bul.).

CABBAGE APHID (Brevicoryne brassicae) - CALIFORNIA - Infestations heavy in untreated cabbage crops in southern area. Medium to heavy damage to all cole crops in Santa Barbara County. (Cal. Coop. Rept.).

IMPORTED CABBAGEWORM (Pieris rapae) - RHODE ISLAND - Adults in large numbers in cabbage and broccoli fields. Damage to cabbage light to medium in most fields. (Steve). DELAWARE - Abundant in cabbage plantings generally. (Milliron).

DIAMONDBACK MOTH (Plutella maculipennis) - MASSACHUSETTS - Heavy infestations in Hampden County and lighter in other areas. (Crop Pest Cont. Mess.).

FLEA BEETLES - NEW JERSEY - Large numbers throughout State on cabbage. Second brood. (Ins.-Dis. News.).

COWPEA CURCULIO (Chalcodermus aenus) - NORTH CAROLINA - Reported in green beans and field peas from several areas. (Dogger et al.).

ALFALFA WEEVIL (Hypera postica) - IDAHO - Adults feeding on beans near a stack of alfalfa hay. Amount of injury local. (Douglass, July 13).

A LEAF ROLLER (Platynota stultana) - ARIZONA - Damage in 40 acres of castor beans in Maricopa County, July 12. Severely infesting a large planting of seed celery west of Phoenix. (Ariz. Coop. Rept.).

BEET ARMYWORM (Laphygma exigua) - CALIFORNIA - Common in bean fields in western Los Angeles County. Heavy damage to some fields of garbanzo (chickpea) in Santa Barbara County. (Cal. Coop. Rept.).

WESTERN BEAN CUTWORM (Loxagrotis albicosta) - IDAHO - First moth emerged from hibernation cages in Twin Falls area July 3. (Douglass, July 13).

BEAN APHID (Aphis fabae) - DELAWARE - Heavy on commercial lima beans several areas. (Milliron).

PEA APHID (Macrosiphum pisi) - PENNSYLVANIA - Considerable acreage sprayed in Union, Centre, Cambria and Potter Counties. In Centre County 850 acres sprayed. (Adams).

MELON APHID (Aphis gossypii) - UTAH - Damaging cucurbits in Washington County. (Knowlton).

ONION THRIPS (Thrips tabaci) - CALIFORNIA - Medium damage to black-eyed beans in Orange County. (Cal. Coop. Rept.). NEVADA - Severe populations in most untreated fields. (Gallaway, July 14).

SQUASH BUG (Anasa tristis) - RHODE ISLAND - Egg clusters three per plant in Johnston. No serious damage. (Steve). OKLAHOMA - Damage to cucurbits heavy in Tulsa area, a few fields of squash completely destroyed. (Coppock). DELAWARE - All stages numerous on squash north of Georgetown. (Milliron). UTAH - Particularly damaging in Washington County. (Knowlton).

HORNED SQUASH BUG (Anasa armigera) - DELAWARE - All stages numerous on squash north of Georgetown and at Ellendale. (Milliron).

SQUASH BEETLE (Epilachna borealis) - DELAWARE - Injurious to squash and cucumbers in Georgetown area. (Milliron).

GARDEN SYMPHYLID (Scutigerella immaculata) - CALIFORNIA - Damage to sprouting seed and young banana squash in San Fernando Valley of Los Angeles County. One-half of 40-acre field destroyed. Medium to heavy damage to tomato and bean plantings in Santa Cruz County. (Cal. Coop. Rept.).

BEET WEBWORM (Loxostege sticticalis) - COLORADO - Severe in sugar beets, lettuce and peas in Rio Grande, Saguache and Alamosa Counties. Lettuce in some cases has 10-15 larvae per head. (Chem. Ind.).

BEET LEAFHOPPER (Circulifer tenellus) - NEVADA - Curly top incidence nil in Churchill County. (Dorst, Lauderdale, Gallaway, July 14). UTAH - Causing up to 55 percent loss of tomatoes at Santa Clara and 10-50 percent at Kanab. Most of State not severely affected. (Knowlton).

APHIDS - MINNESOTA - Heavy infestations on raspberries and strawberries in Albert Lea, Faribault, Lakeville and Twin City areas. (Minn. Ins. Rept.). MAINE - Populations on untreated potatoes in Aroostook County have tripled but infestations are unusually small for this time of year. (Shands et al.).

LYGUS BUGS (Lygus sp.) - CALIFORNIA - Medium to heavy damage occurred to lettuce in Santa Cruz County. (Cal. Coop. Rept., July 17). IDAHO - Populations of L. elisus and L. hesperus averaged 10 per sweep in a 90-acre radish field west of Blackfoot. (Gittins).

STRAWBERRY ROOT APHID (Aphis forbesi) - PENNSYLVANIA - Very heavy on 3000 strawberry plants in Franklin County. (Adams).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - CALIFORNIA - Nominal damage to strawberries in San Mateo County. Medium infestations on the coast in Santa Barbara County. Heavy in some strawberry fields in San Diego County and heavy infestations on bush berries in San Bernardino County. Populations building up slowly in lima bean fields in southern area. (Cal. Coop. Rept.).

CYCLAMEN MITE (Steneotarsonemus pallidus) - CALIFORNIA - Medium infestations in some Santa Barbara County strawberry fields and heavy infestations in Orange County. (Cal. Coop. Rept.).

ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) - CALIFORNIA - Thirty percent of artichoke buds infested in San Mateo County. Damage heavy in Santa Barbara County. (Cal. Coop. Rept.).

LEAFHOPPERS (Empoasca sp.) - ARIZONA - Light but increasing in three 80-acre castor bean fields at Mesa. Damage beginning. (Ariz. Coop. Rept.). IDAHO - E. filamenta common in most potato fields in eastern area; 5-10 adults per plant. (Gittins). CALIFORNIA - E. abrupta very numerous in squash and pumpkin plantings in San Fernando Valley, Los Angeles County. (Cal. Coop. Rept.).

ONION MAGGOT (Hylemya antiqua) - OREGON - Onions being attacked more severely than normally near Nyssa. Nearly 50 percent damage in several fields. Lesser damage to onions in Ontario area. (Morrison).

PEPPER MAGGOT (Zonosemata electa) - NORTH CAROLINA - Test plots in Duplin County show over 50 percent of Red Cherry variety infested but adjacent plots of Hungarian Yellow wax variety undamaged. (Reid, Farrier).

SPINACH LEAF MINER (Pegomya hyoscyami) - IDAHO - Injuring sugar beet foliage south of Burley. Most fields show 10 percent plants infested with a 5-acre field showing about 50-60 percent of plants infested. (Gittins).

TOBACCO INSECTS

BUDWORMS (Heliothis spp.) - NORTH CAROLINA - Numbers in Bertie County. (Grant, Rabb). Boring in stalks more than usual this year. (Scott). Very light generally in Granville County. (Chamberlin). Not as heavy now as in past two weeks when infestation of 10-20 larvae per 25 plants common in Transylvania County. (Davis). SOUTH CAROLINA - Particularly injurious to top leaves. (Nettles). KENTUCKY - H. zea at present most important pest of tobacco in State. (Boush).

HORNWORMS (Protoparce spp.) - NORTH CAROLINA - Infestation generally light in Granville County. (Chamberlin). Averaged 1.1 eggs and 0.5 larva per 25 plants in east central counties. (Farrier). SOUTH CAROLINA - Unusually light this season. (Nettles).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - NORTH CAROLINA - Increasing in east central counties with some fields with 1-3 adults per leaf. (Farrier). SOUTH CAROLINA - Complaints of injury increasing. (Nettles).

JAPANESE BEETLE (Popillia japonica) - NORTH CAROLINA - Adults attacking tobacco in Craven, Washington and Pamlico Counties and especially severe on field borders. (Scott).

LONG-HORNED GRASSHOPPERS - KENTUCKY - Causing serious injury to tobacco, especially in the bud, in central area. (Boush). WISCONSIN - Threatening tobacco in Dane County. (Wis. Ins. Rept.).

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - NORTH CAROLINA - Damage has increased markedly in untreated fields in most counties. (Cott. News. Lett.). SOUTH CAROLINA - Average infestation in 38 counties was 8 percent in treated fields and 33 percent in untreated. Increase in activity over State. (Cott. Lett., July 16). Seventeen percent infestation in 31 treated fields in Florence County and 41 percent infestation in 72 treated fields in Darlington County. (Walker et al.). GEORGIA - Average of 30

percent infestation in 42 fields in northeast and southeast counties; range of 2-78 percent. (Johnson). TENNESSEE - Damaging infestations light in southwestern counties. Between broods. Infestation averaged 19 percent compared with 28 last week. (Locke). MISSISSIPPI - Infestations about same as last week in delta counties but some higher. Average infestation for 43 fields north of Stoneville was 11 percent. Average for 20 fields in south delta was 26 percent. Some counts as high as 95 percent. (Merkel, Furr et al.). ARKANSAS - Situation variable. First-generation weevils very numerous in many fields receiving showers and infestations increased sharply. In fields not receiving showers, excellent dry weather control has been obtained and emergence is much slower. Infestation by area this week and last: southeast 11.7 and 6.5, east central 6.3 and 3.9, northeast 6.8 and 4.5, central 16.4 and 20.0, southwest 34.2 and 20.5. (Warren, Harrendorf, Barnes). LOUISIANA - Infestation averages by parish: Concordia 24 percent in 10 fields, Franklin 30 in 1, Bossier 44 in 5, Ouachita 70 in 5, Red River 40 in 1, Natchitoches 72 in 2, Rapides 16 in 2, Tensas 41 in 10 and Evangeline 0-1 in 2. (Oliver). Squares examined in 121 fields in Tallulah area and all found infested at rate of 30 percent compared with 27 last week. Infestation gradually increasing. (Pfrimmer et al.). OKLAHOMA - Local fields in east central and southeast counties showing as high as 80 percent square damage. (Flora, July 14). TEXAS - Increases in east, northeast, north central and central areas, especially in irrigated fields. (Turney, Martin, July 17). Infestation averaged 29.2 percent in 13 untreated and 18 in 12 treated fields in McLennan and Falls Counties. (Parencia et al.).

BOLLWORMS (Heliothis spp. et al.) - NORTH CAROLINA - Still potential pests. One to 3 percent damaged bolls in many areas. (Cott. News Lett.). SOUTH CAROLINA - Increasing again in many counties. (Cott. Lett., July 16). Of 72 fields examined in Darlington County, damaged squares found in only 1. Catch of moths increased considerably: 620 H. zea against 145 last week and 216 H. virescens compared with 18. (Walker et al.). TENNESSEE - Damaging numbers appearing in fields in west Tennessee treated for boll weevil. Several fields in Dyer County have heavy infestations. (Locke). GEORGIA - Average of .75 larvae per 100 terminals in 42 fields in northeast and southeast counties. (Johnson). MISSISSIPPI - Eggs appearing in some fields in delta counties; .8 per 100 terminals. Little damage. (Merkel, Furr et al.). LOUISIANA - Eggs found in all of 121 fields inspected in Tallulah area at rate of 3.5 eggs per 100 terminals. Larvae found in 117 fields at rate of 2.1 per 100 terminals. Potential continues in most fields but damage generally light. (Pfrimmer et al.). Increasing in several parishes: 10 eggs per 100 terminals in Tensas, 23 larvae and 6 eggs per 100 in 1 field in Natchitoches, 20 larvae and 6 eggs per 100 in 1 field in Bossier. Heavy moth flights in Bossier Parish. (Oliver). ARKANSAS - Increasing in south and east central areas. (Warren, Harrendorf, Barnes). MISSOURI - From 0-7 eggs and 0-13 larvae per 100 terminals in 464 fields. (Kyd, Thomas). TEXAS - Extremely heavy infestations in some fields. Light to heavy in 7 fields in Henderson County, 7 in Kaufman County and in 34 fields in Van Zandt and Bowie Counties. As high as 300 eggs per 100 terminals in irrigated cotton in Brazos and Robertson Counties with heavy damage in some fields. (Turney, Martin, July 17). Continue heavy in irrigated cotton in McLennan and Falls Counties. (Par-

encia et al.). OKLAHOMA - Reported from several counties, heavy in scattered fields on Muskogee County. (Flora). ARIZONA - Increasing on cotton from Maricopa County to Santa Cruz County. Oviposition heavy in Pima and Pinal Counties, July 13. Three to 7 larvae per 100 plants on 7000 acres in Maricopa County and 600 acres in Graham County. (Ariz. Coop. Rept.).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Increasing rapidly in irrigated cotton in south central area. (Turney, Martin, July 17).

SPIDER MITES - NORTH CAROLINA - Increased in spite of weather. Reported as problem in some fields in 10 counties. (Cott. News Lett.).

TENNESSEE - Light in many fields in west Tennessee. (Locke).

GEORGIA - Tetranychus sp. light in Jackson, moderate in Hart and heavy in Jenkins County. (Johnson). MISSISSIPPI - From light to heavy in a few locations in delta counties. (Merkl, Furr et al.). ARKANSAS - Continue active and increasing in some areas. Heavy enough to warrant control in some cases. (Warren, Harrendorf, Barnes). LOUISIANA - Light to moderate in many fields. (Oliver). MISSOURI - Recorded in 25 of 464 fields, mostly in margins. (Kyd, Thomas). ARIZONA - Generally light from Maricopa County to Santa Cruz County, July 13. (Ariz. Coop. Rept.).

APHIDS - SOUTH CAROLINA - Cotton aphid continues to increase in Coastal Plains counties. (Cott. Lett., July 16). GEORGIA - Aphis gossypii light in Lincoln and Hancock Counties; moderate in Elbert, Richmond, Burke, Jenkins, Emanuel Counties; heavy in Washington County. (Johnson). LOUISIANA - Remain light in most fields. (Oliver). ARIZONA - Heavy on 100 acres in Graham County. (Ariz. Coop. Rept.).

FLEAHOPPERS - ARIZONA - More numerous on cotton at Yuma than previous years, 10-15 per 100 sweeps in some fields. Ten to 14 per 100 sweeps on 2000 acres at Phoenix, 10-12 per 100 sweeps on 600 acres at Safford, 18-35 per 100 sweeps on 5000 acres in Queen Creek. (Ariz. Coop. Rept.). MISSOURI - From 0-26 per 100 terminals in 464 fields, 98 percent of fields showed some infestation. (Kyd, Thomas). OKLAHOMA - Heaviest infestations in Coal and Caddo Counties. (Flora).

LYGUS BUGS - CALIFORNIA - High populations in many cotton fields in San Joaquin Valley. (Cal. Coop. Rept.). ARIZONA - Increasing rapidly on cotton in Pima, Pinal and Maricopa Counties, July 13. Per 100 sweeps by county: 8-32 in Maricopa, 8-25 in Pinal, 2-15 in Pima. Sixteen to 30 per 100 sweeps on 600 acres at Safford July 17. (Ariz. Coop. Rept.).

COTTON LEAF PERFORATOR (Buccalatrix thurberiella) - ARIZONA - General in Buckeye area, Maricopa County; 15-20 larvae per 50 sweeps in a few fields. Severe in parts of Pinal County and abundant in stub cotton in Yuma County locations. (Ariz. Coop. Rept., July 16).

BEET ARMYWORM (Laphygma exigua) - ARIZONA - Local damage to cotton near Yuma. (Ariz. Coop. Rept., July 16). MISSISSIPPI - Infesting edge of cotton fields in Holmes County. (Hutchins).

CABBAGE LOOPERS - ARIZONA - Trichoplusia ni general but light in all areas; 10 larvae per 50 sweeps in one field in Maricopa County. (Ariz. Coop. Rept., July 16). TEXAS - Increase in north and south plains areas and in irrigated cotton in other areas. Some "ragging". (Turney, Martin, July 17).

COTTON LEAFWORM (Alabama argillacea) - LOUISIANA - First moth of season at Tallulah taken in light trap July 19. First moth in 1955 was caught August 8. (Pfrimmer et al.).

GRASSHOPPERS - OKLAHOMA - Marginal damage over wide areas. (Flora).

WHITEFLIES - ARIZONA - Increasing in several counties. Stunting late plantings, July 16. Very abundant on 150 acres at Queen Creek. (Ariz. Coop. Rept.).

A LEAF ROLLER (Platynota stultana) - ARIZONA - Significant damage in Litchfield Park area. (Ariz. Coop. Rept., July 16).

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) - CALIFORNIA - Moving from alfalfa into cotton in San Joaquin Valley, July 12. (Cal. Coop. Rept.).

THRIPS - ARIZONA - Populations remain high in most fields but plants generally outgrowing damage. (Ariz. Coop. Rept., July 16).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

LARCH SAWFLY (Pristiphora erichsonii) - WISCONSIN - Scattered light defoliation in northwestern area. (Wis. Ins. Bul.).

JACK-PINE BUDWORM (Choristoneura pinus) - MINNESOTA - Egg-laying underway in Park Rapids area. (Minn. Ins. Rept.).

TIP MOTHS - TEXAS - Constant infestations on loblolly pines in northern Orange County. (Angle).

WHITE-PINE WEEVIL (Pissodes strobi) - RHODE ISLAND Larval damage evident throughout State. Very heavy in Smithfield area where few trees escaped injury. (Steve).

TURPENTINE BEETLE (Dendroctonus sp.) - TEXAS - Populations continue to cause mortality of sawlog size pine in Hardin, Polk, Walker and Trinity Counties. (Peterson).

PITCH MASS BORER (Vespamima pini) - WISCONSIN - Damaging pines in Sauk County. (Wis. Ins. Bul.).

A COLASPIS BEETLE (Colaspis sp.) - TEXAS - Increasing on slash pine in southern Newton County. (Mattson).

PINE NEEDLE MINER (Exoteleia pinifoliella) - PENNSYLVANIA - Nearly every needle of Japanese red pine infested in Westmoreland County. Pupae and adults. (Jeffery).

A FLEA BEETLE (Systema marginalis) - FLORIDA Reported causing moderate damage to foliage of pond cypress over an estimated 2,000 acres in St. Johns County. Damage causes reddening of needles in mid-summer. Determined E. P. Merkel. (Denmark, July 5).

SARATOGA SPITTLEBUG (Aphrophora saratogensis) - WISCONSIN - Adults emerging in northwestern and central areas. Generally lighter than last year. (Wis. Ins. Bul.).

YELLOW-NECKED CATERPILLAR (Datana ministra) - DELAWARE - Defoliating pin oak from Newark southward and southern red oak in the Redden State Forest. (Milliron).

RED-HUMPED OAKWORM (Symmerista sp.) - DELAWARE - Unusually prevalent on various oaks especially white oak from Newark to Bridgeville. (Milliron).

AN OAKWORM (Anisota virginensis) - DELAWARE - Causing defoliation of white and pin oaks throughout State. (Milliron).

ASIATIC OAK WEEVIL (Cyrtopistomus castaneus) - DELAWARE - Adults numerous on various oaks from Newark to Bridgeville and causing

conspicuous leaf injury. (Milliron).

COLUMBIAN TIMBER BEETLE (Corthylus columbianus) - WEST VIRGINIA - Heavy locally in white oaks statewide. (Dorsey, Hansen).

OAK LACE BUG (Corythucha arcuata) - WEST VIRGINIA - Heavy feeding on oaks statewide. (Dorsey, Hansen).

AN OAK LEAF MINER (prob. Cameraria sp.) - PENNSYLVANIA - Many white oaks in central area with 75 percent of leaves with mines. (Gesell).

JAPANESE BEETLE (Popillia japonica) - RHODE ISLAND - Abundant throughout State, feeding on variety of plants. No severe damage. (Steve). PENNSYLVANIA - Very abundant southwestern area. (Udine). Feeding lightly on Chinese chestnut in central area. (Gesell). NORTH CAROLINA - Adults increasing rapidly in Watauga County and feeding on various ornamentals. (Tuckwiller). Feeding on ornamentals in Ash and Caldwell Counties. (Scott).

ASIATIC GARDEN BEETLES (Autoserica castanea) - DELAWARE - Destructive to various herbaceous ornamentals at Smyrna and Fieldsboro. Adults common at Newark. (Milliron).

LOCUST LEAF MINER (Chalepus dorsalis) - MARYLAND - Causing considerable discoloration of black locust in all sections. (U. Md., Ent. Dept.). WEST VIRGINIA - Severe infestation on black locust statewide. (Dorsey, Hansen).

EUROPEAN ELM SCALE (Gossyparia spuria) - OREGON - Causing severe damage in Gilliam County. (Every).

A NOTODONTID (Cerura borealis) - DELAWARE - Defoliating silver poplar at Petersburg. (Milliron).

NORWAY-MAPLE APHID (Periphyllus lyropictus) - IDAHO - Extremely high populations common on maple trees in Moscow. Large amounts of honeydew on unsprayed trees and premature shedding of leaves. (Manis).

ELM LEAF BEETLE (Galerucella xanthomelaena) - NEW JERSEY - Seriously attacking elm leaves. (Ins.-Dis. News., July 17). IDAHO - Continues to cause damage to some trees in Magic Valley area. Some trees in Shoshone area show heavy damage. (Gittins).

A CERAMBYCID (Derobrachus germinatus) - ARIZONA - Adults very numerous and reported digging into ground around Mexican palo verde trees. Associated with severe root damage. (Ariz. Coop. Rept.).

POPLAR AND WILLOW BORER (Sternochetus lapathi) - SOUTH DAKOTA - Damaging willow trees in Brookings area. (Severin).

WILLOW SAWFLY (Nematus ventralis) - NORTH DAKOTA - Completely defoliating three-year-old willow shelterbelt in Grand Forks County. (N. D. Ins. Rept.).

MIMOSA WEBWORM (Homadaula albizziae) - DELAWARE - Causing light to moderately heavy damage at many locations from Smyrna southward. (Milliron). ARKANSAS - Defoliating mimosa trees in some sections. (Warren, Harrendorf, Barnes).

BAGWORMS - PENNSYLVANIA - Very abundant in southwestern area and on white pine in Butler County. Control needed. (Udine). VIRGINIA - Numerous complaints received in eastern area about injury to arborvitae and other ornamentals. (Brubaker, Greenwood, Hofmaster).

BAGWORM (Thyridopteryx ephemeraeformis) - DELAWARE - Severe on black locust at Newark and less so on sycamore and black walnut. (Milliron). WEST VIRGINIA - Defoliation extensive to arborvitae and other ornamentals statewide. (Dorsey, Hansen).

MITES - NORTH DAKOTA - Light to moderate infestations on juniper and spruce. (N. D. Ins. Rept.). WISCONSIN - Spider mites, possibly Tetranychus telarius and others have been reported causing lack of vigor in spruce trees. (Wis. Ins. Bul.).

A COREID (Mozena obtusa) - TEXAS - Heavy widespread populations on mesquite in Motley County. (Pallmeyer).

POTATO LEAFHOPPER (Empoasca fabae) - DELAWARE - Unusually heavy and causing tip burn of wistaria at Newark. (Milliron).

RHODODENDRON LACE BUG (Stephanitis rhododendri) - RHODE ISLAND - Adults heavy on rhododendron, causing yellowing. (Steve).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - NORTH CAROLINA - Light trap catches in Pamlico County indicate heavy populations. (Cromroy).

SALT-MARSH MOSQUITO (Aedes sollicitans) - MARYLAND - Abundant and biting in many areas on lower Eastern Shore. (U. Md., Ent. Dept.).

HORN FLY (Siphona irritans) - OKLAHOMA - Average 800 per animal on 200 yearling steers in Creek County. (Coppock).

HOUSE FLIES - MARYLAND - Abundant in untreated dairy and beef barns in Carroll and Worcester Counties. (U. Md., Ent. Dept.).

SECONDARY SCREW-WORM (Callitroga macellaria) - NORTH CAROLINA - In dehorning wound of calves in Davie County. (Dogger, Young).

A RABBIT BOT (Cuterebra sp.) - NORTH CAROLINA - Larva taken from 8-week-old puppy in Lincoln County. (Batts, Farrier).

FLEAS - GEORGIA - Heavy infestation annoying humans in Spalding County. (Beckham, July 13).

LIVESTOCK PESTS - IDAHO - Cattle lice, cattle grubs, hog louse and hog mange mite have been numerous in Butte County. (Gittins).

STORED PRODUCTS INSECTS

GRAIN MITE (Acarus siro) - OREGON - Mites covered floor beside sacked feed to a depth of one inch in a Coquillo feed store, July 10. (Goeden).

BENEFICIAL INSECTS

LADY BEETLES - CALIFORNIA - Continue to control spotted alfalfa aphid in Orange County where little treatment has been required. Increases in alfalfa fields in central areas. In Tehama County, July 10, lady beetles, especially Hippodamia convergens were numerous in alfalfa fields infested with spotted alfalfa aphid. (Cal. Coop. Rept.). IDAHO - Abundant throughout eastern and south central area on most crops, particularly alfalfa and red clover. One alfalfa field heavily infested with pea aphid near Twin Falls had 20 larvae per sweep. (Gittins).

PREDATORS - ARIZONA - Abundant in majority of alfalfa and cotton fields of all principal growing areas. In order of abundance they are Hippodamia, Collops, Orius and Chrysopa. Nabis, Zelus and smaller coccinellids are also active. In castor bean fields in Mesa area, Collops vittatus was most numerous with up to 2-3 per leaf. Chrysopa sp. also numerous in most fields. (Ariz. Coop. Rept.). CALIFORNIA - Orius tristicolor most numerous of any insect in some alfalfa in Sacramento Valley. (Cal. Coop. Rept.). IDAHO - Nabids more numerous in alfalfa fields, 2-3 per sweep. (Gittins).

MISCELLANEOUS INSECTS

EUROPEAN EARWIG (Forficula auricularia) - CALIFORNIA - Very heavy infestations in homes in Santa Barbara County and heavy damage occurred in some yards in Amador County. First heavy infestations in this area. (Cal. Coop. Rept.). IDAHO - Numerous reports from Lincoln, Gooding, Twin Falls and Cassia Counties of damage around homes and infestations in houses. Abundant in Moscow area. (Gittins, Manis).

ADDITIONAL NOTES

NEW YORK - RED-BANDED LEAF ROLLER numbers heavy by July 20 in eastern area and moths appearing in Niagara, Monroe and Orleans Counties. CODLING MOTH light in Poughkeepsie area and in Monroe and Oswego Counties. APPLE APHID increasing in Orleans and Oswego Counties. TWO-SPOTTED SPIDER MITE building up fast in Orleans County. EUROPEAN CORN BORER in pupation in Hudson Valley July 16. Heavy infestation in Columbia and Monroe Counties. LEAFHOPPERS damaging some beans in Genesee County. APHIDS abundant on white pine on Long Island. PINE SHOOT MOTH and NANTUCKET PINE TIP MOTH severe on Long Island, especially on Japanese black pine. (N. Y. Wkly. Rept.).

ALABAMA - LESSER CORNSTALK BORER continues to cause moderate to severe damage. Fields of grain sorghum destroyed in Lee County and light to moderate infestations in peanuts in southeastern area. (Mount, Arant). FALL ARMYWORM heavy in Jefferson and Henry Counties. EUROPEAN CORN BORER laying eggs on corn in Sand Mountain area. (Eden). Observations in cotton showed the following in 10 southeastern counties: BOLLWORM eggs found in 40 of 47 fields and ranged from 1-9 per 100 terminals. All 47 fields were infested with BOLL WEEVIL with an average of 37.9 percent infestation. (Tyus). Boll weevil situation is critical. (Arant).

VIRGINIA - JAPANESE BEETLE medium on corn, roses and some trees in several areas of Halifax County. (Hall). Light to medium in Rockingham County. (Peterson). Severe locally in corn, grapes and other small fruit in Shenandoah County. (Coinger). Outbreaks occurring in Fluvanna, Clarke, Bedford and New Kent Counties. GREEN JUNE BEETLE severe locally in Ladino clover pastures in Amelia County. (Holmes). Swarms appearing at Richmond. (Willey, Freund). CORN EARWORM damage heavier than usual to corn in Augusta County (Woodside) and damaging corn in Shenandoah County (Coinger). SOUTHERN CORNSTALK BORER severely attacking corn in Chesterfield, Henrico and Hanover Counties. (Matheny). VARIABLE OAK LEAF CATERPILLARS heavily defoliating oaks and other trees in several areas. (Morris). BAGWORMS severe on cedar trees along roads in the Harrisonburg-Winchester-Warrenton-Richmond area. (Willey). WALNUT CATERPILLAR attacking foliage of walnut and pecan trees many areas. (Morris). LOCUST LEAF MINER heavy on locust trees in northern and southern areas. (Willey). ORCHARD MITES appearing in apple orchards in Augusta County. (Woodside).

SURVEY METHODS

UNIFORM SURVEY PROCEDURE APPROVED BY THE LAKE STATES FOREST INSECT SURVEY COMMITTEE - 1956

LARCH SAWFLY DAMAGE APPRAISAL SURVEY

PURPOSE:

The larch sawfly, Pristiphora erichsonii (Htg.), is found throughout the tamarack type in the Lake States; however, the intensity of infestation varies from place to place. A standard method of appraising the damage is urgently needed so that all agencies can report infestations in a similar manner. The following procedure, in use by the Division of Forest Insect Research, Lake States Forest Experiment Station, is submitted as a means of fulfilling this objective. It can be used once to obtain data on stand condition and severity of defoliation or annually to follow population trends.

Tamarack mortality attributed to sawfly defoliation was observed for the first time in the present outbreak in Minnesota during 1954 and 1955. Landowners may wish to take some means of preventing defoliation and damage because much of the tamarack growing on the better sites will soon be commercially important. Also, it may be the only species that will reach merchantable size on a boggy site. If protection is considered it will be of prime importance to know how much defoliation, over how long a period, is required to cause death of the trees or predispose them to death by other factors. If the majority of the trees will survive, even though growth is reduced, it is doubtful whether protection measures will be necessary. The proposed procedure will give this type of information from year to year.

INSTRUCTIONS:

It will be possible to follow population trends and determine the factors causing, or leading up to, tree decadence by establishing permanent observation points throughout the tamarack areas.

Observation Point Establishment

1. All permanent observation points will be established in easily accessible tamarack stands, pole size or larger, that contain 70 percent or more tamarack and are at least 10 acres in extent. The landowner should be consulted to obtain permission to enter and to request that the stand will not be removed for a period of years. It would be advisable to locate points on public lands away from major highways whenever possible.
2. Each permanent observation point should be specifically located and described on the form attached so that it can be readily found. Each point should be adequately marked, so as to facilitate ease of locating, by a band of paint on a power or telephone pole or on nearby trees.
3. A line of 10 dominant trees, at least 1 chain apart and beginning 2 chains in from the road, will be permanently marked and used for sample trees. Each tree should be marked with a 2-inch band of paint at d. b. h., completely circling the tree; a number, 1 to 10, will be neatly painted above this band. A Valspar-type enamel, tangerine in color, has proved very satisfactory because it shows up well in the woods and has long-lasting qualities. Repainting is necessary when the numbers cannot be determined or in case sample tree is windthrown and must be replaced by a nearby tree of similar size.
4. A square tenth-acre plot (1 chain on a side) will be established in the stand somewhere near the line of sample trees; possibly containing some of them. A line of trees, immediately adjacent to the edge of this plot, will be painted to delineate the plot boundaries; the paint marks should face the center of the plot. The primary purpose of

the plot will be to observe the development of tree decadence.

Field Observations

At each observation point two separate records will be made and marked on the attached form. One is a defoliation record and the second is a bark beetle record. These observations will be made after all feeding by the sawfly has ceased (approximately August 1).

1. Defoliation estimates - A defoliation estimate will be made for each of the 10 marked sample trees. The live crown is broken down into thirds visually, and a separate estimate to the nearest 5 percent is made for each crown level and then an average for the tree is obtained. When averaging, it must be realized that the upper one-third of the crown does not represent one-third of the total foliage. In making the estimates, because defoliation may vary in different quadrants of the crown, it is necessary to walk completely around the tree. Defoliation estimates will be recorded separately for each tree; the plot average will then be based on these 10 trees.

The d. b. h. for each of the 10 marked sample trees will be measured with a diameter tape to the nearest tenth of an inch and recorded on the form.

Total tree height for each sample tree is measured using an Abney level or hypsometer and recorded.

2. One-tenth-acre plot observations - Within the 1/10-acre plot all living trees in a 4-inch d. b. h. class or above will be counted and recorded by species. Only tamarack, spruce, and cedar should be considered.

Of these trees all showing recent bark beetle attack (present year) will be counted and recorded. If bark beetles are present, specimens should be sent in to the State Agency involved, or to the Lake States Forest Experiment Station, for determination.

By following these 1/10-acre plots over a period of years, some idea of tree decadence will be obtained. The recording of spruce and cedar as well as the tamarack should make possible the detection of tree decadence resulting from other factors besides the sawfly. An example would be excessive high water over a relatively long period. This should be reflected in all three tree species even though it may affect each in a different degree.

All field data should first be sent to the proper State agency; after being recorded the material can then be forwarded to the Lake States Forest Experiment Station for coordination. (L. C. Beckwith, Forest Service, U. S. D. A.).

LARCH SAWFLY DAMAGE APPRAISAL SURVEY

(1) Collecting point No. _____ (2) Approx. acreage sampled _____ (3) Date _____

(4) Location: T _____ R _____ S. _____ (5) Landowner _____

(6) Reporting agency _____ (7) Observers _____

(8) Stand condition:

Density: Poor Medium Good
Site : Dry Hummocky Wet

(9) Individual tree record

Tree No.	DBH	Ht.	Defoliation %
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Average _____

(10) 1/10-acre plot Tamarack Spruce Cedar
(a) No. living trees above 4" DBH class _____
(b) No. trees containing bark beetles _____
(c) No. trees dead but not harboring bark beetles _____

(11) Larch casebearer: None Light Medium Heavy

(12) Remarks: _____

Instructions for Reporting Larch Sawfly Conditions

(1) For Reporting Agency only.

(2) - (7) - Self-explanatory.

(8) Underline one that best pertains to the stand.

Density: Forest Service Classification - Poor (100-224 trees/acre),
Medium (225-324 trees/acre), Good (325+ trees/acre).

Site : Dry and wet are self-explanatory; hummocky refers to a stand that has very irregular ground surface, the high areas are generally dry while the depressions are generally wet.

(9) Tree record: Tree No., DBH (in tenths of an inch), Ht. (in feet),
Defoliation percent (ocular estimate to the nearest 5 percent)

(10) 1/10-acre plot (1 ch. square).

(11) Larch casebearer - Record spring defoliation.

(12) Any additional information concerning the stand condition.
(RETURN TO STATE AGENCY IN CHARGE OF SURVEY.)

LIGHT TRAP COLLECTIONS

Pseud. Agrotis Prod. Perid. Feltia Heliothis Protoparce Laphyg.
unipun. ypsilon ornith. marg. subt. zea vires. sexta quinq. frugip.

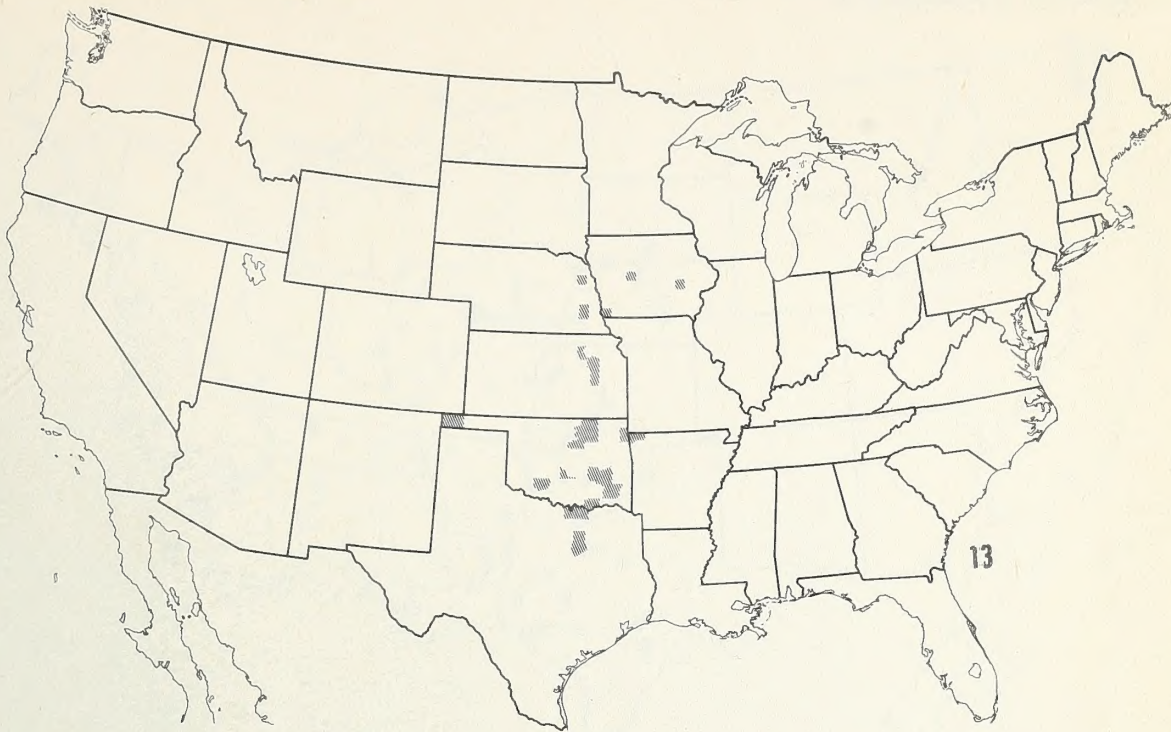
COLORADO (Counties)													
Larimer	7/7-13	19											
Otero	7/3-5	120											
TEXAS													
College Station	7/1-15	3	1	155	3		5004	7					916
Denton	7/1-15			1			620						
Weslaco	7/1-15	126	122	836	30		5790	824					1746
Winter Haven	7/1-15	2		6	1		255	1					
Waco	7/14-20			8	6	3	432	11					
ARKANSAS													
Hope	7/13-18						95						
Shuttgart	7/12-18	2	1				17						
Van Buren	7/12-18						41						
Varner	7/12-18		26		3		43						
Fayetteville	7/14-20	30	20		7		92						
Clarksville	7/12-18	4	26				81						
LOUISIANA													
*Tallulah	7/13-19	48	15	340	3	129	506	10	75	1			157
Baton Rouge	7/14-20	2		61		235	31		19				21
Curtis	7/8-15						200		14				
MISSISSIPPI (Counties)													
*Washington	7/13-19	218	58		14		444						
Coahoma	7/14-20	8	59	33			92						
Humphreys	7/14-20	6	3	180		16	114						
Lauderdale	7/14-20	5	1	29	7		36	3					
Oktibbeha	7/14-20	35	8	401	2	34	24	1					
TENNESSEE (Counties)													
Madison	7/10-16	22	6	13	2		60						
Lawrence		20		16			2		19		2		
Maury		88	4	64			68		12		4		
Robertson		56	4	66			24		30		3		
Cumberland		35	3	11	6		2		10		1		
Knox		22	6	134	2		26		1				
Greene		72	8	88			20		17		1		
Blount		32		172	4		20		3				
Johnson		487	96	100	96		24		3		3		
GEORGIA (Counties)													
Tift	7/13-19	42	34	108		108	605	16	53				59
Spalding	7/13-19	29	16	45	1	66	28	1	13		7		17
Clarke	7/11-18	22	41				14	6	8		4		
FLORIDA													
Gainesville	7/11			3			1	1	4				
Homestead	7/12					3			1				
Quincy	7/16	2		7			16	13	2				
SOUTH CAROLINA (Counties)													
Florence	7/7-13	10	8	125	2	338	145	18	134		3		
Charleston	7/2-8		6			2	1		6		3		
Oconee	7/8-21	108	1	120	6	86	10	1	11		2		3
NORTH CAROLINA (Counties)													
Duplin	7/18-19			10		4	5	3	10		6		
Johnson	7/18-19	3	1	3				1	12		2		
MARYLAND (County)													
Montgomery	7/11-20	12	5		1		2		1		10		
OHIO (County)													
Athens	7/9-15	54	6				1						
ILLINOIS													
Urbana	7/13-19	322	17	18	64		1		2				
MISSOURI (County)													
Boone	7/14-20	41	11		7		20		4				2
WISCONSIN													
DeForest	7/11-15	160					14						
MINNESOTA (County)													
Ramsey	7/11-17	58	10		1								
SOUTH DAKOTA													
Brookings	7/18-19	81	22										
INDIANA (Counties)													
Lawrence	7/11-19	204	5	12	4		3		27		6		
Tippecanoe	7/13-19	75	11	4	4								
ALABAMA (County)													
Lee	7/11-20	59		430			92	6	10	4			462

Other Collections: Colorado (Otero County, 7/4-5) Loxostege sticticalis - 5,040.
Texas (Weslaco, 7/1-15) Trichoplusia ni - 93,830.
Louisiana (Tallulah, 7/13-19) Alabama argillacea - 1.

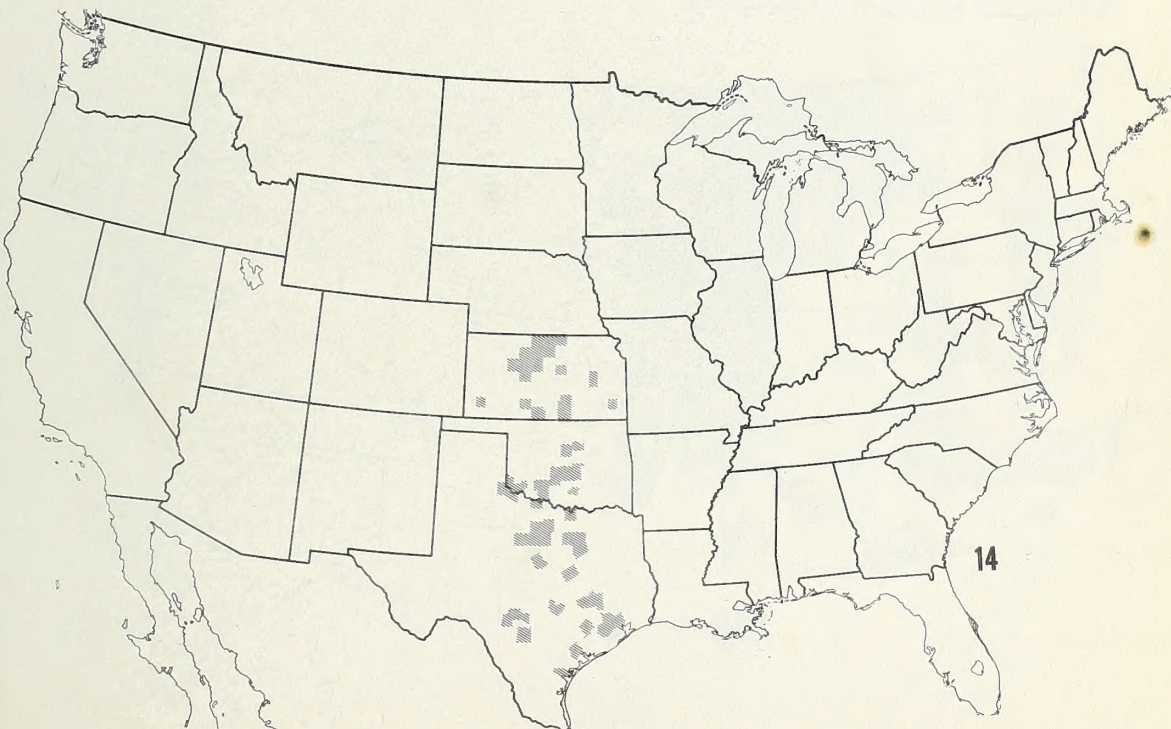
*Three traps Tallulah, Louisiana; two traps Washington County, Mississippi.

DISTRIBUTION OF RANGE GRASSHOPPERS

Boopedon auriventris McNeill

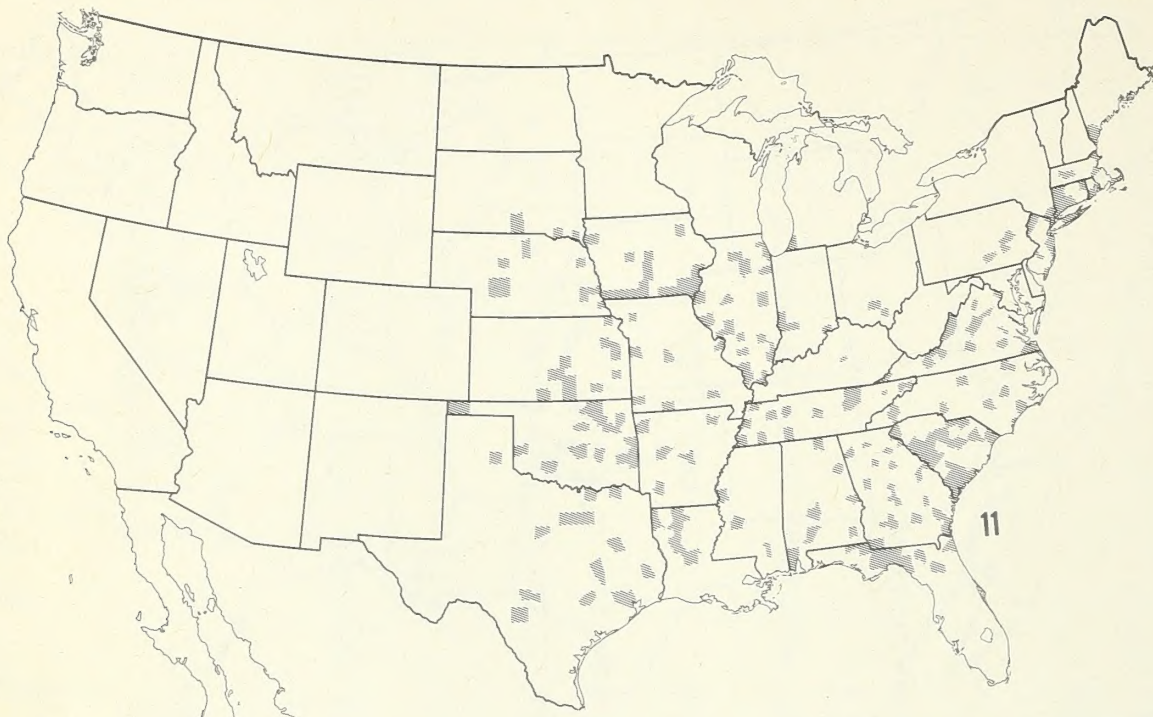


Boopedon gracile Rehn



DISTRIBUTION OF RANGE GRASSHOPPERS

Arphia xanthoptera (Burmeister)



Aulocara ellioti (Thomas)

